

What is claimed is:

1. A method of distinguishing oil based drilling fluid from subterranean formation fluid hydrocarbons during nuclear magnetic resonance testing, said method comprising adding paramagnetic species to the drilling fluid prior to said testing.
2. The method of claim 1 wherein said paramagnetic species comprises transition metals, rare earth metals, persistent organic radicals, or combinations thereof, having paramagnetic character.
3. The method of claim 1 wherein said paramagnetic species comprises Fe^{3+} , Mn^{2+} , Ni^{2+} , and Cu^{2+} , Gd^{3+} , tetramethylpiperidinyl-1-oxyl ions or combinations thereof.
4. The method of claim 1 wherein said paramagnetic species are oil solubilized.
5. The method of claim 1 wherein said paramagnetic species are oil soluble.
6. The method of claim 1 wherein said testing is in a borehole and said drilling fluid is circulated in the borehole after addition of said paramagnetic species and prior to said testing.
7. The method of claim 1 wherein said nuclear magnetic resonance measurements are made in an earth formation during logging while drilling operations.
8. A method of detecting hydrocarbon-bearing zones in a formation penetrated by a borehole drilled with oil-based drilling fluid, said method comprising adding paramagnetic species to said drilling fluid prior to or during the drilling of said borehole, circulating said fluid in said borehole; and acquiring nuclear magnetic resonance measurements of at least a portion of the formation.
9. The method of claim 8 wherein said nuclear magnetic resonance measurements are taken during logging while drilling operations.
10. The method of claim 8 further comprising taking at least one core sample from the region of said formation at which the nuclear magnetic resonance measurements were taken.

11. A method of detecting or identifying characteristics of hydrocarbons in the formation surrounding a borehole drilled with oil-based drilling fluid, said method comprising adding paramagnetic species to said drilling fluid prior to or during the drilling of said borehole, circulating said fluid in said borehole; and acquiring nuclear magnetic resonance measurements of at least a portion of the formation.

12. The method of claim 11 wherein said nuclear magnetic resonance measurements are taken during logging while drilling operations.

13. The method of claim 11 further comprising taking at least one core sample from the region of said formation at which the nuclear magnetic resonance measurements were taken.

14. A process of analyzing the fluid composition of a subterranean formation near a borehole drilled with oil-based fluid, said process comprising adding oil soluble or oil solubilized paramagnetic species to said oil-based fluid prior to or during said drilling of the borehole and detecting any filtrate of said drilling fluid in said formation using nuclear magnetic resonance.

15. The process of claim 14 wherein said paramagnetic species comprises transition metals, rare earth metals, persistent organic radicals, or combinations thereof, having paramagnetic character.

16. The process of claim 14 wherein said paramagnetic species comprises Fe^{3+} , Mn^{2+} , Ni^{2+} , and Cu^{2+} , Gd^{3+} , tetramethylpiperidinyl-1-oxyl ions, or combinations thereof.

17. The process of claim 14 wherein said analysis is conducted in the laboratory on cores of the formation sampled after said drilling with fluid to which said paramagnetic species were added.

18. The process of claim 14 wherein said analysis is conducted using measurements taken with a nuclear magnetic resonance tool in said borehole after said drilling with fluid to which said paramagnetic species were added.

19. A nuclear magnetic resonance process of analyzing the fluid composition of a subterranean formation near a borehole drilled with an oil-based drilling fluid containing paramagnetic species and detecting any filtrate of said drilling fluid in said formation using said paramagnetic species.

20. The process of claim 19 wherein said paramagnetic species comprises transition metals, rare earth metals, persistent organic radicals, or combinations thereof, having paramagnetic character.

21. The process of claim 19 wherein said paramagnetic species comprises Fe^{3+} , Mn^{2+} , Ni^{2+} , and Cu^{2+} , Gd^{3+} , tetramethylpiperidinyl-1-oxyl ions, or combinations thereof.

22. A drilling fluid comprising an oil base and paramagnetic species soluble in said base.

23. The drilling fluid of claim 22 wherein said oil base is a synthetic oil.

24. The drilling fluid of claim 22 wherein said oil base is a natural oil.

25. The drilling fluid of claim 22 wherein said paramagnetic species comprises transition metals, rare earth metals, persistent organic radicals, or combinations thereof, having paramagnetic character.

26. The drilling fluid of claim 22 wherein said paramagnetic species comprises Fe^{3+} , Mn^{2+} , Ni^{2+} , and Cu^{2+} , Gd^{3+} , tetramethylpiperidinyl-1-oxyl ions, or combinations thereof.

27. The drilling fluid of claim 22 wherein said paramagnetic species has been formulated to be soluble in oil.

28. The drilling fluid of claim 22 wherein said paramagnetic species has been oil solubilized.

29. A method of drilling for hydrocarbons, said method comprising using the drilling fluid of claim 22.
30. The method of claim 29 further comprising determining the location of said hydrocarbons using nuclear magnetic resonance.
31. The method of claim 29 further comprising analyzing the quantity of said hydrocarbons using nuclear magnetic resonance.
32. A method of drilling a borehole in a subterranean formation, said method comprising using an oil-based drilling fluid comprising paramagnetic species comprising transition metals, rare earth metals, persistent organic radicals, or combinations thereof, having paramagnetic character.
33. The method of claim 32 wherein said paramagnetic species in said drilling fluid are oil soluble.
34. The method of claim 32 wherein said paramagnetic species in said drilling fluid are oil solubilized.
35. The method of claim 32 further comprising logging said formation using a wireline nuclear magnetic resonance tool in said borehole.
36. The method of claim 35 further comprising using the logs from said logging to analyze the formation fluids.
37. The method of claim 32 further comprising taking core samples from said formation.
38. The method of claim 37 further comprising testing said core samples using nuclear magnetic resonance to analyze the formation fluids.
39. A method of preparing an oil-based drilling fluid, said method comprising providing an oil base and paramagnetic species soluble in said base.

40. The method of claim 39 wherein said oil base is a synthetic oil.
41. The method of claim 39 wherein said oil base is a natural oil.
42. The method of claim 39 wherein said paramagnetic species comprises transition metals, rare earth metals, persistent organic radicals, or combinations thereof, having paramagnetic character.
43. The method of claim 39 wherein said paramagnetic species comprises Fe^{3+} , Mn^{2+} , Ni^{2+} , and Cu^{2+} , Gd^{3+} , tetramethylpiperidinyl-1-oxyl ions, or combinations thereof.
44. The method of claim 39 wherein said paramagnetic species has been formulated to be soluble in oil.
45. The method of claim 39 wherein said paramagnetic species has been oil solubilized.